Studies on Afrotropical Crambinae (Lepidoptera, Pyraloidea, Crambidae): Notes on the genus *Aurotalis* Błeszyński, 1970

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Abstract. The Afrotropical genus *Aurotalis* Błeszyński, 1970 is briefly reviewed and two new species are described and illustrated: *A. cristata* **sp. n.** and *A. dicksoni* **sp. n.** *Charltona argyrastis* Hampson, 1919 is transferred to *Aurotalis* Błeszyński, 1970. A list of the known species and a diagnosis of each species are given. Illustrations of new diagnostic morphological characters are presented.

Keywords: Africa - Ancylolomia - Charltona - distribution - new combination - new species - Prionotalis.

INTRODUCTION

The genus Aurotalis was erected by Błeszyński (1970: 20) for two species, A. dionisa and A. nigrisquamalis. Subsequently, Euchromius delicatalis was transferred to Aurotalis by Schouten (1992: 197) and A. hermione and A. similis were described by Bassi (1999).

While studying afrotropical Crambinae collected during the last years, I found new series of specimens of this genus, this both in the field and in several museum collections. I am now able to add two new species to this very characteristic genus and to treat all previously described species by illustrating their diagnostic morphological characters.

MATERIAL AND METHODS

The descriptions are based on all available specimens. The length of the labial palpus is compared to the maximum diameter of the composite eye in side view. Genitalia slides were made using standard procedures (Robinson, 1976), and the terminology follows Klots (1970) for genitalia and Landry (1995) for tympanal organs. All specimens studied came from the collections listed in the abbreviations list.

Abbreviations used:

BMNH Natural History Museum, London, UK.

CGB Graziano Bassi private collection, Avigliana

(Torino), Italy.

GS...GB Genitalia slide... G. Bassi.

MFNB Museum für Naturkunde Berlin, Germany. MHNG Museum d'histoire naturelle, Genève, Swit-

zerland.

TMSA Distong National Museum of Natural History

(formerly the Transvaal Museum), Pretoria,

RSA

RSA Republic of South Africa.

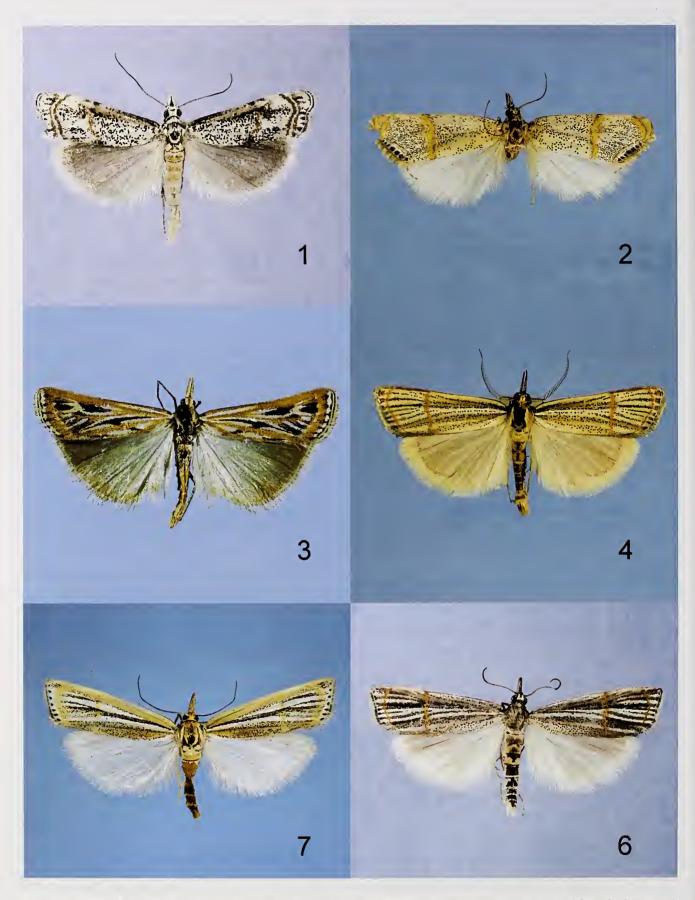
TAXONOMY

Genus Aurotalis Błeszyński, 1970

Aurotalis Błeszyński, 1970: 20, type species Aurotalis dionisa Błeszyński, 1970, by original designation.

Diagnosis: So far, the only diagnostic character for *Au-rotalis* is the presence in female genitalia (on the papillae anales) of strong setae originating from the tips of short projections in the highly corrugated upper surface. Adults are distinguished from those of the most closely related genera in having long labial palpi, associated with the forewing colour being at least partly white.

Redescription (Figs 1-6): Ocelli and chaetosemata well developed. Labial palpi three times or more as long as the maximum diameter of the composite eye in side view. Forewing at least partly white. Wing venation of *A. nigrisquamalis*, slightly different from that of *A. delicatalis* as illustrated by Schouten (1992: 192, fig. 2): in forewing R1 present and free, not connected to Sc; R2 free; R3 connected with R4 at 3/4; R5 free; M1 from middle of cell; cell opened between R5 and M2; M2 and M3 not stalked; CuA1 from lower corner of cell; CuA2 at distal 1/3 of cell; 1A+2A strong. Hindwing with Sc connected to Rs at distal 1/3; M1 free, visible only distally; M3 connecting to M2 and Cu1 at distal 1/3, Cu2 connecting to M2 at half of



Figs 1-6. Adults of *Aurotalis* spp. (1) *A. cristata* sp. n., male paratype, Zimbabwe, wingspan 20 mm. (2) *A. delicatalis* (Hampson), female, RSA, wingspan 26 mm. (3) *A. dicksoni* sp. n., holotype, wingspan 28 mm. (4) *A. nigrisquamalis* (Hampson), male, RSA, wingspan 28 mm. (5) *A. dionisa* Błeszyński, female, Namibia, wingspan 28 mm. (6) *A. similis* Bassi, male, Zimbabwe, wingspan 28 mm.

length; a1, a2 and a3 unforked. Colours tend to become faint in old specimens. Abdominal segment VIII, simple and narrow in the female, shows distinguishing sclerotizations in the male (Figs 16-19, 30).

Tympanal organs (Fig. 23-25). Transverse ridge rounded. Tympanic bridge well developed, lightly sclerotized. Tympanic drum ovoid. Venulae secundae well developed, concave. The well developed and lightly selerotized tympanic bridge seems to be the more constant feature through the genus, other characteristics being rather variable.

Male genitalia (Figs 9, 13-15, 26, 29, 30): Uncus more or less apically downeurved. Gnathos strongly upeurved while being straight, simple or bifid. Tegumen and valva stout being tapering. Vinculum without or with small dorsal projection. Pseudosaccus small. Phallus stout to elongate, with maximum two cornuti.

Female genitalia (Figs 12, 20-22, 27, 28): Papillae anales with strong setae on upper surface, originating from tips of short projection of highly corrugated membrane. Both apophyses strongly developed. Ostium bursae and sterigma membranous. Corpus bursae suboval, without signa.

Systematic position: This genus is part of the Ancylolomia Hübner complex of genera (Bassi,

2013). Bleszyński (1970: 20) claimed that is closest to Conotalis Hampson, but the most closely related genus seems to be Prionotalis Hampson 1919b: 152, as in Conotalis species the phallus has a long cornutus, a feature never seen in Aurotalis. The relatively short valva, strong vinculum and tegumen, phallus about as long as valva in male genitalia suggest that both Aurotalis and Prionotalis are closely related to the locupletella group of Ancylolomia (Figs 7-9). In the same way, female genitalia are similar in these three groups in the stout papillae anales and corpus bursae, and in the ductus ejaculatorius departing from the corpus bursae (Figs 10-12).

Biology: Early stages are unknown, probably feeding in grasslands. The adults are easily attracted by light.

Distribution: The genus seems to be distributed through the highlands and mountains from Austral Africa to Kenya. However, only one species, *A. nigrisquamalis* (Hampson) is a common moth in RSA and Swaziland.

Remarks: The morphological character evolution appears very diversified, especially those of the genitalia.

Key to the species of Aurotalis Błeszyński

1a	Forewing ground colour white
1b	Forewing ground colour not white
2a	Forewing ground colour yellow
2b	Forewing ground colour ochre brown; hindwing brown suffused white basally; male genitalia with juxta u-shaped and phallus clearly divided into two parts
3a	Median and subterminal faseiae on forewing present4
3b	Fasciae on forewing absent, ground colour almost entirely white, with only a fulvous tinge along costa; hindwing
	brown margined white; female genitalia with a globular wrinkled extension at the end of duetus bursae
4a	Forewing with orange median fascia, subterminal fascia ill-defined, dorsum chestnut brown and three large dots at tornus; hindwing light brown; male genitalia with two cornuti on vesica
4b	Forewing with double subterminal fascia; hindwing grey suffused white; male genitalia with gnathos stout with dorsal crest-like process and juxta with finger-like dorsal process; female genitalia with papillae anales dorsally bulged, ductus bursae short and sclerotized and corpus bursae proximally spinulate
4c	Forewing with single subterminal faseia; hindwing white suffused grey; male genitalia with vesica with single spatulate cornutus; female genitalia with rather long ductus bursae, lightly sclerotized only close to eorpus bursae
5a	Hindwing white
5b	Hindwing yellow suffused grey and brown with yellow fringes; forewing with orange yellow median and sub-
	terminal fasciae; male genitalia with bilobed gnathos; female genitalia with papillae anales with ventral upturned tip
6a	Hindwing pure white; forewing with two longitudinal white lines and median and subterminal fasciae yellow;
	male genitalia with tapered cucullus and narrow and curved phallus; presence of feathery coremata; female geni-
	talia with papillae anales straight margined and semicircular selerotization in the ductus bursae
6b	Hindwing white suffused yellow; forewing with bicolored median fascia and terminal spots beneath vein 5; male
	genitalia with phallus stout, shorter than valva and vesica without cornuti; female genitalia with funnel-shaped
	ductus bursas and large corpus bursas

Aurotalis argyrastis (Hampson, 1919) comb. n. Fig. 28

Charltona argyrastis Hampson, 1919b: 306, 307.

Holotype: ♂ [Kenya, 0°23'N, 34°29'E], Brit[ish] E[ast] Africa, N[orth] Kavirondo, Nasisi Hills, 4800 f[ee]t, 14.VI.1911, (S. A. Neave), 1912-92, GS 11157 BM (6001 Błeszyński), *Charltona argyrastis* type ♀ H[a]mps[o]n, BMNH(E) 1378093. Deposited in BMNH.

Type locality: Kenya, Nigeria.

Diagnosis: This species is easily separated from the other known members of the genus by virtue of its pale forewings. *A. delicatalis* (Hampson) (Fig. 2) and rubbed *A. nigrisquamalis* (Hampson) have pale forewings too, but they have smaller females (25 mm versus 30 mm). The female genitalia have an unusual wrinkled extension between the ductus and corpus bursae that is not found in any other species of the genus.

Additions to original description:

Female genitalia (Fig. 28): Papillae anales rather straight

margined. Apophyses posteriores as long as apophyses anteriores. Ostium bursae funnel-shaped, membranous. Ductus bursae as long as corpus bursae, moderately sclerotized and distally with large globular and strongly wrinkled extension. Corpus bursae suboval. Ductus seminalis opening in globular extension of ductus bursae.

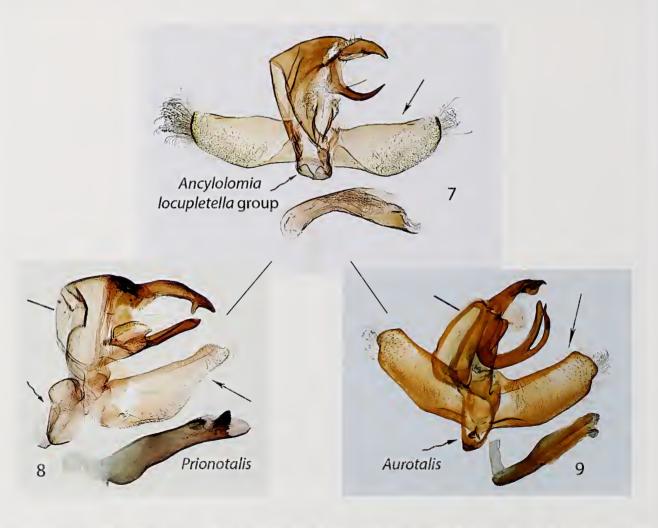
Distribution: Kenya, Nigeria.

Remarks: Males are unknown. The second specimen known is a female from Northern Nigeria, Ropp Hills, 20.VII.1920, and has no abdomen.

Aurotalis cristata sp. n. Figs 1, 12, 17, 24, 26, 27

Holotype: ♀, Zimbabwe, Bulawayo, Matopo Nat[ional] Park [20°33'S, 28°30'E] 28.30.XI.1993, leg. Mey & Ebert, GS 4060.— GB; Holotypus *Aurotalis cristata* n. sp. G. Bassi det. 2002. Deposited in MFNB.

Paratypes: Zimbabwe: 2° , 4° , same data as holotype, GS 3840 GB; 1° , S[outhern] Africa, Manicaland



Figs 7-9. Crambinae spp., male genitalia, differences among close genera. (7) *Ancylolomia planicosta* Martin, RSA. (8) *Prionotalis balia* (Tams), Tanzania. (9) *Aurotalis cristata* sp. n., Zimbabwe. Arrow = valva; flash arrow = vinculum; thick bar = tegumen

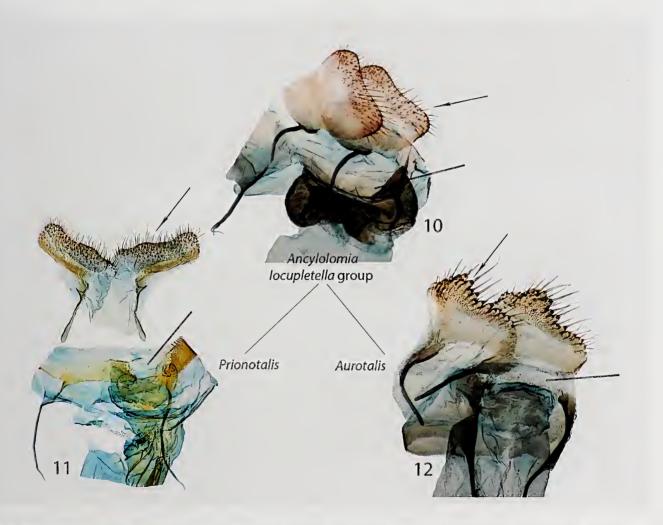
Prov[ince], Vukutu, 18°21'S32°36'E, h 1900 m, 1-3. XII.2010, Ustjuzhanin P. & Kovtunovich V. -1, Zimbabwe, 15.III.1951, G. C. Clarke. -1, Emangeni, Rhod[esia], 19.I. [19]'18, A. J. T. Janse. -1, Lundi, Rhod[esia], Nuanetsi Dist[rict], 13.III.1976, M. J. Scoble; 1, Darwendale, 17-19.I.1955, D. W. Rorke. -RSA: 1, Messina, T[rans]v[aa]l, 20 m. South, II.1950, N. Mitton. -2, Midw[est] L[ouis] Trichardt, Wilie's [Wyllie's] Poort, 28 and 31.I.[19]25, A. J. T. Janse. -1, 5, Blauwkop, 30.I.[19]25, A. J. T. Janse, GS 4671 GB. -1, 1, Nelspruit, 2.1910, H. G. Breijer. -1, Skukuza, 2.XII.1974, L. Vari, GS 4661 GB. -1, Buffelspoort, 15.XII.[19]24, A. J. T. Janse. Deposited in CGB, MHNG, MFNB and TMSA.

Diagnosis: At least in Zimbabwe, *A. cristata* (Fig. 1) co-occurs with *A. similis* Bassi (Fig. 6), but it is clearly smaller (14-20 mm versus 22-26 mm respectively), it has a double subterminal fascia and no longitudinal white lines. It shares a wingspan similar to males of *A. delicatalis* (Hampson), but it is darker, with

the forewing narrower and with the ground colour white. Male genitalia of *A. cristata* (Fig. 26) ean be distinguished from those of congeners by the narrow, tapering and pointed uncus, the presence of a saccular process on the valva and the juxta subcylindrical and with a finger-like projection. The female genitalia (Figs 12, 27) are small and with a sclerotized ductus bursae, in comparison to the larger and membranous ductus bursae of *A. delicatalis* (Fig. 21).

Etymology: The name derives from the Latin *cristatus-a*, crested, and refers to the shape of the gnathos in the male genitalia.

Description (Fig. 1): Wingspan 14-20 mm. Labial palpi 3× longer than widest diameter of eye, black and white. Frons rounded, clearly produced, black with outer margin white. Antennae serrate, narrower in female, brown; costa with narrow band of scales white and black. Ocelli and chetosemata poorly developed. Head with raised scales, medially black, laterally white. Patagia white with basal scales black. Tegulae



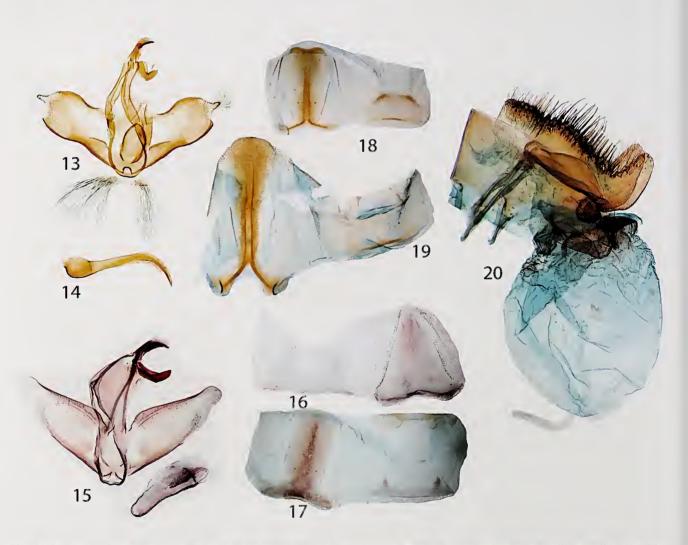
Figs 10-12. Crambinae spp., female genitalia, differences among close genera. (10) *Ancylolomia planicosta* Martin, Tanzania. (11) *Prionotalis balia* (Tams), Tanzania. (12) *Aurotalis cristata* sp. n., paratype, Zimbabwe. Arrow = papillae anales; thick bar = ostium bursae.

white with black spot in middle. Thorax white with black scales. Abdomen yellowish white with anal tuft pure white. Forewing ground colour white with black markings over all surface and brown patches along costa; median fascia wavy, brown with some additional black scales; subterminal faseia broad, wavy, with margins brown, silvery white in middle; postmedian spot silvery white bordered with brown and black; five black submarginal spots; outer margin black from apex to mid-termen; fringe tricolored with basis white, middle black and outer margin silvery white except at termen, completely silvery white. Hindwing grey to white suffused grey in some PP; fringe white. Male sclerotizations of abdominal segment VIII as in Fig. 17. Female abdominal segment VIII with sternite unsclerotized and tergite narrow and laterally more sclerotized.

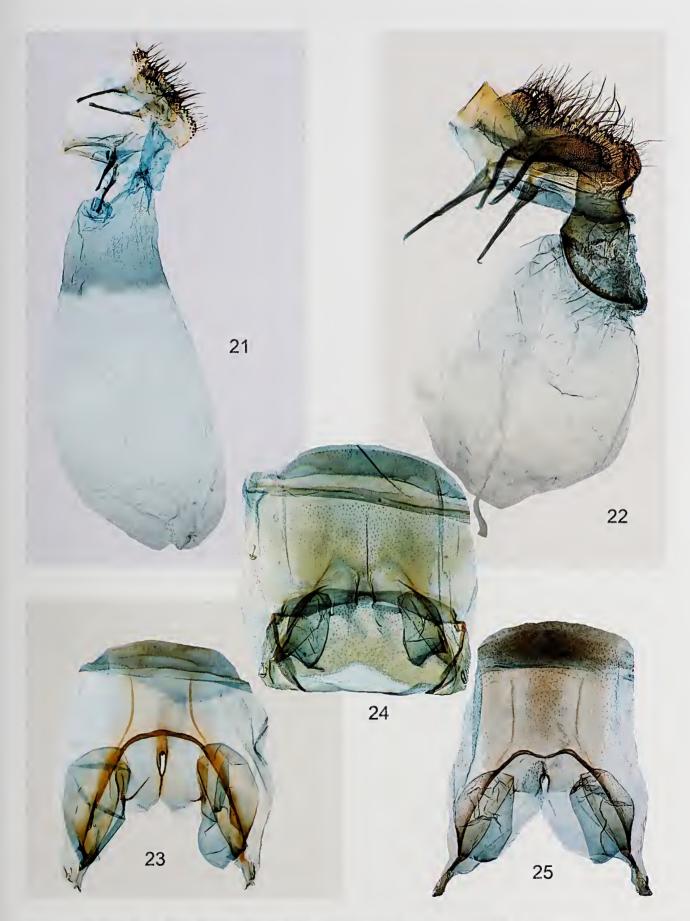
Male genitalia (Fig. 26): Uncus shorter than gnathos,

narrow, with pointed tip. Gnathos broad, straight, with rounded apex and dorsal crest-like sclerotization. Tegumen dorsally fused with uncus, broad membranous area at base of uncus, gnathos and tegumen. Tegumen subtriangular, narrowing toward vinculum. Vinculum narrow, with moderate v-shaped dorsal projection. Juxta subcylindrical, well sclerotized, with finger-like dorsal process. Valva 1.2× length of phallus, with large membranous basal area; cucullus rounded; costa simple, slightly bent; single saccular process small and rounded; harpe with wrinkled sclerotization. Phallus simple, with dorsal bulge in postmedian area; vesica with several thin scobinations.

Female genitalia (Figs 12, 27): Papillae anales broad and well sclerotized, dorsally bulged. Apophyses posteriores 1/3 longer than apophyses anteriores, well sclerotized. Apophyses anteriores thin. Ductus bursae short and sclerotized. Corpus bursae suboval, broad and spinulate in



Figs 13-20. Aurotalis spp., genitalia and male abdominal segment VIII. (13) A. dionisa Błeszyński, male genitalia, Namibia. (14) The same, phallus. (15) A. delicatalis (Hampson), RSA, phallus extracted on the right. (16) A. delicatalis, sclerotizations of abdominal segment VIII. (17) A. cristata sp. n., Zimbabwe, sclerotizations of abdominal segment VIII. (18) A. dionisa Błeszyński, Namibia, sclerotizations of abdominal segment VIII. (19) A. nigrisquamalis (Hampson), Swaziland, sclerotizations of abdominal segment VIII. (20) The same, female genitalia, RSA.



Figs 21-25. *Aurotalis* spp., female genitalia and tympanal organs. (21) *A. delicatalis* (Hampson), female, RSA. (22) *A. dionisa* Błeszyński, female, Namibia. (23) *A. dionisa* Błeszyński, male, Namibia. (24) *A. cristata* sp. n., female paratype, RSA. (25) *A. dicksoni* sp. n., male paratype.

first half. Ductus seminalis opening in first third of corpus bursae.

Distribution: RSA, Zimbabwe.

Aurotalis delicatalis (Hampson, 1919) Figs 2, 15, 16, 21

Ommatopteryx delicatalis Hampson, 1919a: 535. Euchromius delicatalis (Hampson, 1919). – Błeszyński & Collins, 1962: 305.

Aurotalis delicatalis (Hampson, 1919). - Schouten, 1992: 197.

Type locality: Malawi.

Diagnosis: The male is similar to *A. cristata* (Fig. 1) in wingspan, but the forewing ground colour is yellow. The metallic silver discoidal lunule, bicolored median fascia in forewings and terminal spots beneath vein 5 distinguish *A. delicatalis* from the other congeners. The male genitalia are most similar to those of *A. similis* (Bassi, 1999: 16-19), but the phallus is without cornutus. The female genitalia are distinguished from

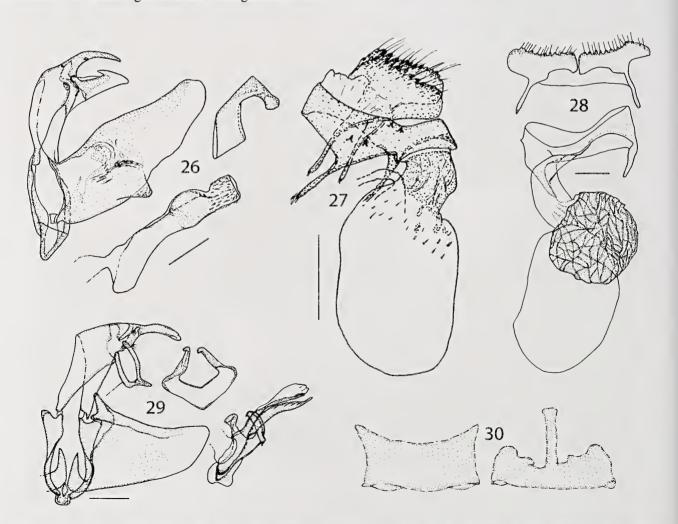
those of other *Aurotalis* by the membranous sterigma and the narrow and membranous ductus bursae.

Additions to original description: Wingspan from 18 to 26 mm, with males smaller. Male sclerotizations of abdominal segment VIII as in Fig. 16. Female abdominal segment VIII lightly sclerotized.

Male genitalia (Fig. 15): Uncus slightly longer than gnathos, apically downcured, apex blunt. Gnathos tapered. Tegumen subtriangular. Vinculum narrow, without dorsal projection. Juxta flat. Peudosaccus small. Valva simple, narrowing apically. Phallus stout; vesica with several scobinations.

Female genitalia (Fig. 21): Papillae anales with apical margin straight, ventrally blunt. Both apophyses well developed. Sterigma membranous. Ductus bursae wrinkled, 0.2x length of corpus bursae. Corpus bursae large, suboval, wrinkled and weakly spinulate basally. Ductus ejaculatorius opening in lateral expansion of corpus bursae, proximally at 0.2.

Distribution: Malawi, RSA.



Figs 26-30. Aurotalis spp., genitalia and abdominal segment VIII. (26) A. cristata sp. n., holotype, on the right juxta and phallus. (27) A. cristata sp. n., female paratype, Zimbabwe. (28) A. argyrastis (Hampson), holotype. (29) A. dicksoni sp. n., male paratype, on the right juxta and phallus. (30) A. dicksoni sp. n., sclerotizations of abdominal segment VIII. Scale: 0.5 mm.

Aurotalis dicksoni sp. n. Figs 3, 25, 29, 30

Holotype: ♀, [RSA, Western Cape, 32°10S, 22° 20'E] Nieuwvelds M[oun]t[ai]ns, 20.XII.1957, CGC Dickson; Holotypus *Aurotalis dicksoni* n. sp. G. Bassi det. 1998. Deposited in TMSA. Not dissected.

Paratype: 1♀, same data as holotype, GS 3551 GB. Deposited in CGB.

Diagnosis: The broad silvery white and brown streaks on the forewings distinguish *A. dicksoni* from the congeners. The male genitalia are closest to those of *A. dionisa* Błeszyński, but the uncus and gnathos are less curved, the valva has no saccular modification, and the juxta is strongly bifurcated.

Etymology: This species is named in honour of the eollector, C.G.C. Dickson, who made a very valuable collection of moths in RSA.

Description (Fig. 3): Wingspan 28 mm. Labial palpi 4× longer than widest diameter of eye, with inner side white and outer side ochre brown. Maxillary palpi ochre brown. Frons conical, clearly produced, with one pointed tooth, ochre in middle, elsewhere white. Antenna thickened, brown. Ocelli well developed. Chetosemata present. Head yellow. Patagium ochre yellow. Tegulae ochre brown with apex and inner margin white. Thorax ochre. Forewing with broad silvery white and dark brown streaks embedded in ochre ground colour; submarginal area silvery white with dark brown scales along veins; terminal fascia dark brown; fringe with scales chestnut brown at apex, ochre in middle and white at basis. Hindwing brown; fringe whitish with scales brown at their basis. Legs brown to dark bronze brown. Sclerotizations of abdominal segment VIII as in Fig. 30.

Male genitalia (Fig. 29). Uncus broad, with rounded apex slightly bent downward. Gnathos short and narrow, with rather pointed tip. Tegumen elongated and subtriangular. Vinculum narrow, more enlarged near tegumen, without dorsal projections. Juxta with two narrow lateral arms with curved tips. Pseudosaccus minute. Valva simple, elongated, with rounded cucullus and costal margin more strongly selerotized. Phallobase with complex system of attachment to juxta. Phallus strongly divided into narrow dorsal part which includes the vesica and ventral pointed and selerotized arm; vesica without cornuti.

Female genitalia unknown.

Distribution: RSA, known only from the type locality.

Remarks: This is a very characteristic species, both in forewing pattern and in male genitalia. It should belong to *Aurotalis* Błeszyński but it seems quite isolated and only the discovery of the female will resolve the correct generic attribution.

Aurotalis dionisa Błeszyński, 1970

Figs 5, 13, 18, 22, 23

Aurotalis dionisa Błeszyński, 1970: 20.

Type locality: Angola.

Diagnosis: This species is similar in size and wing markings to A. nigrisquamalis (Hampson) (Fig. 4) and A. similis Bassi (Fig. 6) but the forewing ground colour is paler with pale yellow medial and subterminal fasciae, and the hindwings are white. Males also differ by the bipectinate antennae as opposed to only serrate antennae in A. similis. In male genitalia the gnathos stout and upcurved, the tapered cucullus of valva and the phallus with bulged phallobase and strongly downcurved distally will readily separate this species from other members of the genus. In the female genitalia, the relatively long ductus bursae, with a semicircular sclerotization, is diagnostic.

Additions to original description (Fig. 5): Wingspan 20-28 mm, males distinctly smaller. Forewing ground colour thickly dotted with black scales; longitudinal streaks white and blackish brown, expanding between veins after cell; subterminal fascia large, silvery white bordered yellow; fringes golden yellow with short scales tipped black. Hindwing white with veins suffused pale yellow with fringes white. Sclerotizations of male abdominal segment VIII as in Fig. 18.

Male genitalia. Figure 13, from a Namibian specimen, shows the presence of feathery coremata on ventral edge of vinculum, not documented in the original description. Female genitalia. Namibian specimen as in Fig. 22.

Distribution: Angola, Namibia.

Remarks: The adult has not been illustrated before.

Aurotalis hermione Bassi, 1999

Aurotalis hermione Bassi, 1999: 58, 59, figs 5, 11, 12.

Type locality: Zambia.

Diagnosis: The orange median fascia in the forewings, with ill-defined subterminal fascia and dorsum chestnut brown are diagnostic, as well as the vesica with two cornuti, as congeners do not have any cornuti or only one.

Description: Bassi (1999: 58-59).

Male genitalia: Bassi, 1999 (59, figs 11, 12).

Distribution: Zambia.

Remarks: The female is still unknown.

Aurotalis nigrisquamalis (Hampson, 1919) Figs 4, 9, 19, 20

Conotalis nigrisquamalis Hampson, 1919b: 151.

Type locality: RSA.

Diagnosis: This species is similar in size and wing markings to *A. dionisa* Błeszyński (Fig. 5) and *A. similis* Bassi (Fig. 6) but the forewing ground colour is yellow with orange medial and subterminal fasciae, and the hindwings are yellow suffused brown with a partial subterminal dark line. In the male genitalia the bifurcate gnathos, the stout valva, and the phallus with two lateral sclerotized bands will readily separate this species from other members of the genus. In the female genitalia, the papillae anales with upturned ventral tip and the ductus bursae short and strongly sclerotized are diagnostic.

Additions to original description: Fresh adult habitus as in Fig. 4. Sclerotizations of abdominal segment VIII as in Fig. 19.

Male genitalia. Whole genitalia as in Fig. 9, with the ventral enlargement close to the uncus tip, bilobed gnathos, and phallus with two lateral and medio-distal sclerotized bands.

Female genitalia (Fig. 20): Papillae anales stout, upturned posteriorly and with globular bottom down bulge. Ductus bursae short, irregularly sclerotized. Corpus bursae suboval, lightly wrinkled. Ductus ejaculatorius opening in small enlargement of proximal third of corpus bursae.

Distribution: Lesotho, RSA, Swaziland, Zimbabwe.

Aurotalis similis Bassi, 1999 Fig. 6

Aurotalis similis Bassi, 1999: 59, figs 6, 16-20.

Type locality: RSA.

Diagnosis: This species is similar in size and wing markings to *A. nigrisquamalis* (Hampson) and *A. dionisa* Błeszyński, but the forewing ground colour is darker with narrow, orange, median and subterminal fasciae, and the hindwings are white suffused brown. In male genitalia, the phallus with a single blunt cornutus will separate this species from other members of the genus. In female genitalia, the ductus bursae funnel-shaped and lightly sclerotized only near corpus bursae is diagnostic.

Additions to original description: Fresh habitus image as in Fig. 6.

Distribution: Lesotho, Namibia, RSA, Zimbabwe.

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